County: Jefferson
Grant No: G0600035

PROJECT TITLE: Marine Resource Committee Year 6 Administration and Action Projects

DELIVERABLE FOR TASK NOS: 4

PROGRESS REPORT: [ ] FINAL REPORT [✓]

PERIOD COVERED: Summary Report, July 2005 through June 2007

DATE SUBMITTED: July 11, 2007

Attachment 3 to Final Progress Report – Eelgrass Summary Report

This report was funded in part through a cooperative agreement with the National Oceanic and Atmospheric Administration.

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Voluntary Anchor-Free Eelgrass Protection Zone

A Non-Regulatory, Non-Harvest Marine Protected Area
Port Townsend Bay, Washington

SUMMARY REPORT

Prepared for:

Jefferson County Marine Resources Committee

June 2007

By Gabrielle LaRoche

LaRoche + Associates

Acknowledgements

Special thanks to all who assisted this project with their time and expertise in 2005-2007:

MRC Eelgrass Protection Work Group
Caroline Gibson, MRC, Work Group Chair
Judy D'Amore, MRC
Phil Johnson, MRC
Judy Surber, MRC
Andy Palmer, MRC
Tony Petrillo, MRC

Divers & Installation/Removal Team
Amy Leitman, Marine Surveys & Assessments, Port Townsend
Bill Matthews, Dive Team
Lynn Goodwin, dive Team
Chuck Needham, professional diver
Grant Ausk, Dive Master
Steve Lewis, boat operator
Bob Learnhart, boat operator
Hyatt barnes, MRC
Tony Petrillo, MRC
Andy Palmer, MRC

Sign Location Hosts
City of Port Townsend
Port of Port Townsend
Jim & Karen Manier

Project Budget Management
Pat Pearson & Laurie Meyer, WSU

This project and report were funded in part through a cooperative agreement with the National Oceanic & Atmospheric Administration. The views expressed herein are those of the authors and do not necessarily represent NOAA of any of its sub-agencies. Grant #G060035 was awarded by the Northwest Straits Commission via the Washington Department of Ecology to the Jefferson County Marine Resources Committee.

Jefferson County Marine Resources Committee
201 W. Patison, Port Hadlock, WA 98339 360.379.5610 www.mrc.jefferson.wsu.edu/

Gabrielle LaRoche, LaRoche + Associates
555 Blue Sky Drive, Port Townsend WA 98368 360.531.2458
www.larocheandassociates.com

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Summary

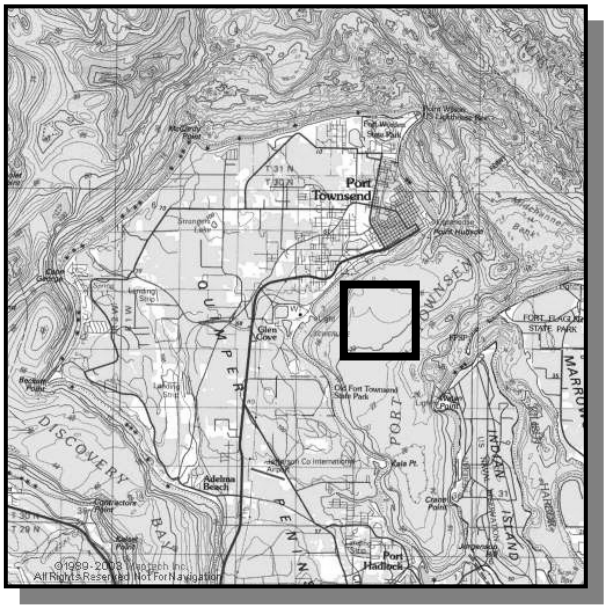
In an effort to minimize the negative impacts of boats anchoring in the nearshore eelgrass (*Zostera marina*) resources along the downtown Port Townsend waterfront and to increase boater safety in a risky anchorage area, the Jefferson County Marine Resources Committee has implemented a Voluntary Anchor-free Eelgrass Protection Zone.

The project employs seasonal marker buoys to delineate the offshore boundary of the fragile submerged habitat and a boater education strategy with informational signs along the shore, project brochures distributed at key locations and additional outreach in popular boating and tourism publications. The summers of 2005 and 2006 continued to implement the project as established in 2004 with minor adjustments, and with an eye to expansion in other locations while seeking partners to maintain the project along the Port Townsend waterfront. Project monitoring of vessel locations showed the number of boats anchoring in the eelgrass dropped from a baseline of 20% during the 2003 boating season to 1.2% in 2004 (McConnell 2005) and 1% in 2005 and 2006.

Background

In 2002, the Jefferson County Marine Resources Committee (MRC) set out to establish a boater education strategy to reduce the negative effects of boat anchors & chains on the nearshore eelgrass (*Zostera marina*) meadows along the downtown Port Townsend waterfront. Surveys completed in 1999 show about 20 acres of eelgrass are present with the mean maximum depth ranging from -10.5 ft to -17.0 ft MLLW (Norris and Fraser, 2002).

The Project Area is part of a one-mile stretch of waterfront from Point Hudson to Boat Haven. The



Project location on Port Townsend's downtown waterfront.

current focus is on protecting eelgrass in the most heavily used portion, a half-mile section in front of the vibrant downtown commercial district, from Point Hudson to the Washington State Ferry Terminal, where the Voluntary Eelgrass Protection Zone (VEPZ) is located. Shoreline development adjacent to the VEPZ is also recognized as a nationally-registered Historic District and Victorian Seaport and a popular tourist destination. The project is specifically designed with no regulatory or penalty components, making it a completely voluntary program.

Eelgrass is a valued marine resource because it provides critical habitat to commercially-, recreationally- and ecologically-important species including salmon, Brandt geese, crab and herring, and it helps reduce shoreline erosion by absorbing wave energy (Wyllie-Escheverria et. al., 2003). The state has a "no net loss" policy to help protect this priority habitat. Distribution of eelgrass habitat is affected by several physical parameters including type of substrate, water clarity, wave energy and tidal amplitude (Berry et. al., 2003). Over-water structures that cause shadowing can have negative effects by limiting available sunlight, (Snohomish County MRC, 2001) and dragging anchors and chains cause sediment disturbance, as well as crush and uproot eelgrass plants.

Phase I of the project began in the spring of 2003 with initial public scoping with the boaters and the local community, as well as a three-day project trial during the popular Wooden Boat Festival in the fall. The MRC proposed using a line of seasonal marker buoys to delineate the deepest edge of the fragile submerged vegetation along with informational signage, brochures and other outreach publications to inform boaters and the public of a half-mile long Voluntary Eelgrass Protection Zone. While delivered as a boater education strategy, the project also qualifies as a community-designated marine protected area (MPA). The term MPA refers in general to any site in a marine system with some type of management restriction in place that affects access, harvest or other human activities, whether regulatory or voluntary (Puget Sound Action Team, 2005.)

Public opinion has been generally very favorable and both local and visiting boaters have responded positively. A few initial concerns expressed about boater perceptions and the need for additional mooring options were addressed and baseline data were established showing that throughout the summer boating season, approximately 20% of boats anchored in the eelgrass of the project area – including the busy Wooden Boat Festival weekend. (McConnell, 2004) All required permits were obtained and the project was ready to move forward with buoy installation for the 2004 boating season. Phase II began in March 2004 and was completed in February 2005. This report summarizes continued implementation of

the Eelgrass Protection zone along the Port Townsend waterfront from July 2005 through June 2007. It also discusses the options for project partners and project expansion.

Buoy Deployment

Equipment Specifications

The MRC deploys seven 74" can-style regulatory buoys with the project logo affixed to both sides of the 9"-diameter high-impact polyethylene cylinders. Each buoy is injected with polyurethane foam, and ballasted at the base with hydraulic concrete, weighing 70lbs in total. Each has a recessed forged-steel swivel eye installed in the base and sits upright in the water with 32" of the buoy above the waterline. Buoy tackle included ¼" diameter, three-strand polypropylene line, ¼" thimble eyes, 3/8" and 5/8" screw-pin shackles and jaw-eye swivels, 5" mid-line floats, and 50 lb. mushroom anchors.

The buoy tackle systems are spliced lines, adding mid-line floats and securing shackle pins with wire keepers. Regulatory permits required an additional 2' of scope beyond the highest estimated tide for a total of 14' above the water depth at mean lower low water (MLLW). Therefore, if the lateral and offshore placement located the buoy anchor in 20' of water (MLLW) the scope would be 34'.

Buoy Installations

In May of each year, seven (7) seasonal marker buoys were installed to delineate the deepest edge of the eelgrass beds along the downtown Port Townsend waterfront. Based on previous years' experience, the MRC used professional divers with volunteer surface support to perform the installation.

Buoy Locations						
No.	Easting (ft)	Northing (ft)	(dd	N Latitude m.mmmm)	(ddd	W Longitude mm.mmmm)
1	1170413	411517	48	6.7226	122	-45.4501
2	1170652	411889	48	6.7848	122	-45.3937
3	1171031	412068	48	6.8158	122	-45.3018
4	1171233	412165	48	6.8423	122	
5	1171531	412357	48	6.8653	122	-45.1807
6	1171793	412574	48	6.9022	122	-45.1178
7	1172134	412760	48	6.9342	122	-45.0352

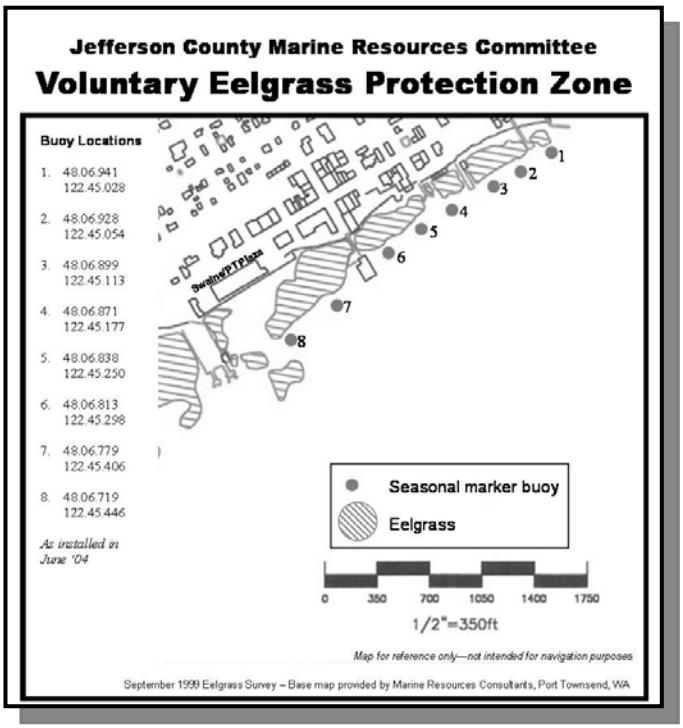
Note: Eastings and northings are Washington state plane -north zone (NAD 83) coordinates

Equipment Failure

In the first two years the project experienced numerous equipment failures at a rate of 37.5% (McConnell 2005). As a result the mushroom anchors were replaced with helical screw anchors for the summer or 2005.

In 2005, several of the buoys were listing upon deployment. This turned out to be a result of defects in manufacturing. As such the buoys were replaced at the expense of the manufacturer.

No other equipment failures have been experienced and the current tackle and anchoring system is reliable with annual replacement of some of the equipment such as shackles and line.



Buoy Removal

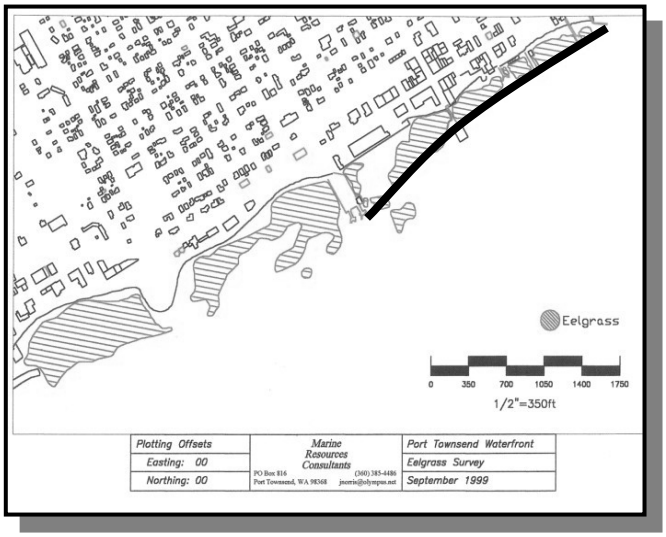
Removal of the buoys was completed in October in both 2005 and 2006 with a professional dive team and volunteer assistance. This occurred later in the fall than anticipated because volunteer availability was limited.

The Port of Port Townsend provided use of their wash-down facility to remove marine growth in preparation for over-winter storage. The project manager provided transport of the equipment to a private residence for storage until seasonal installation in spring of 2006 and 2007.

Project Monitoring

2005-2006 Dockline Photos

In an effort to continue the monitoring begun in previous years, dockline photos were taken during the boating season to record data on anchoring activities along the Port Townsend waterfront. The most recent mapping of eelgrass in the Project Area and to the south shows the deepest edge of the vegetation inside the Voluntary Eelgrass Protection Zone (VEPZ) very closely follows the contour at the seaward ends of the various docks and wharves along the downtown waterfront.



1999 eelgrass map by Marine Resources Consultants. ***Source****: Norris, 1999*

A virtual line that connects the ends these over-water structures was used to establish baseline data on how many boats anchor in the eelgrass. There are two exceptions to this in that the dockline at Union Wharf passes through the dock at the shoreward side of the covered pavilion, and there is no eelgrass present the deep hole in front of Port Townsend Plaza. Dockline photos taken on 27 days during Phase I of the project showed an average of approximately 20% of boats anchoring in the Project Area anchored inside the dockline, and therefore in the nearshore eelgrass meadows (McConnell 2005).

Dockline photos were taken on 9 days during Phase II of the project and showed an average of only 1.4% of boats anchoring inside the VEPZ (McConnell 2005). Dockline photos taken by the project manager in 2005 and 2006 showed an average of only 1% of boats anchoring inside the VEPZ.

This is consistent with the findings of the previous project monitoring data that show very low numbers of boats anchoring inside the VEPZ. Given the significant drop in the number of boaters anchoring in the eelgrass, the buoys appear to be successful at changing boater behavior to the benefit of the submerged eelgrass habitat. Continued monitoring of the project is needed, especially while buoys are installed, and the project work group developed a monitoring plan for future implementation.

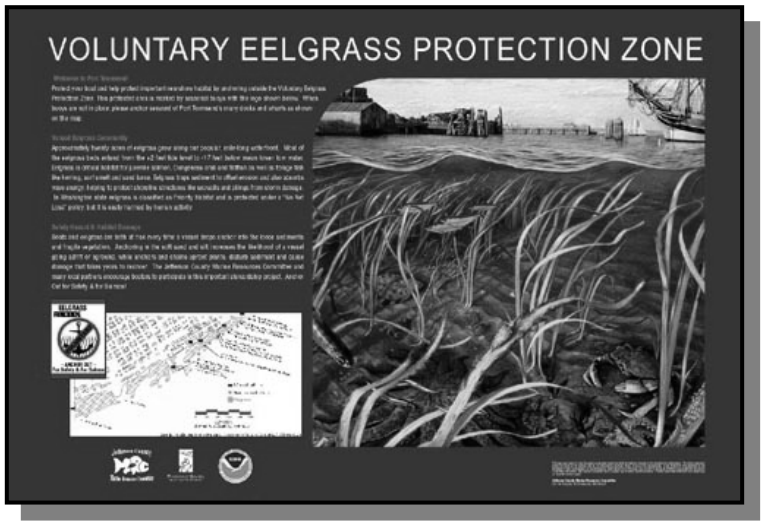
Boater Education & Public Outreach

Informational Signage

In the spring of 2004, six interpretive signs were installed along the shore to inform boaters and the public about the purpose of the seasonal marker buoys and the no-anchor zone. Several volunteers assisted with installations and construction of sign frames and bases. Signs are present at the following locations:

1. Point Hudson Marina Office
2. City Dock
3. Adams Street Beach
4. Union Wharf
5. Tyler Street Beach
6. Boat Haven Fuel Dock

These signs include the project logo, a map showing the extent of eelgrass coverage along the Port Townsend Waterfront, location of the seasonal marker buoys and prominent shoreline features as well as a beautiful full-color illustration of submerged eelgrass habitat and some of the marine wildlife that thrives there.



Informational signage posted at six shoreline locations.
***Source**: Printery Communications, 2004*

In 2007 new aluminum signs were purchased to replace the original steel signs which had begun to deteriorate in the marine environment.

Project Outreach

Because this project hinges on a boater education strategy, public outreach efforts are key to the project's success. Boater education and public outreach efforts were conducted throughout 2005, 2006 and the spring of 2007. These efforts included:

September 2005

- Project information booth at Wooden Boat Festival

October 2005

- *Leader* newspaper feature article

April 2006

- *Leader Visitor Guide* – full color 3-block (3 column x 33 pica) display ad featured project map & logo with descriptive text
- Project information booth at Earth Day Event

May 2006

- *Leader* newspaper feature article

September 2006

- Project information booth at Wooden Boat Festival – distribute miniature buoys to signers of the eelgrass protection pledge

October 2006

- *Leader* newspaper feature article

February 2007

- Project presentation to Port Townsend Yacht Club– distribute miniature buoys to signers of the eelgrass protection pledge

April 2007

- *Leader Visitor Guide* – full color 3-block (3 column x 33 pica) display ad featured project map & logo with descriptive text
- Project information booth at Earth Day Event– distribute miniature buoys to signers of the eelgrass protection pledge

May 2007

- *Leader* newspaper feature article
- Display ad in *Leader* featured project map & logo with descriptive text

June 2007

- Display ad in *Leader* featured project map & logo with descriptive text to run each week (4x)
- Develop and purchase new roll-up banner display for the Eelgrass Protection Project

Project Continuation

Permitting

Permitting is an on-going responsibility for the MRC. In 2005-2007permits were updated as necessary and a long-term lease with WDNR was perfected. The lease was issued as a conservation lease and thus did not require a 3rd order survey to be conducted by a licensed professional surveyor.

The list of required permits and status follows.

City of PT – Shoreline Substantial Development Permit Exemption

- 6-8 seasonal marker buoys, removed during winter & reinstalled each season
- Permit issued 12/12/03, no expiration unless activities not conducted

US Army Corps of Engineers – Nationwide Permit 1 Aids to Navigation

- 8 anchor buoys, remove buoys (detached from anchors) each fall and reinstall each spring
- Use underwater floats &/or neutral density/buoyant lines to prevent scour
- Scope of line must be no greater that the distance from the bottom to tidal elevation 14 feet above MLLW (that is 2 feet greater than the elevation of the Highest Estimated Tide)
- Diver will install each anchor by hand to minimize turbidity
- Mushroom anchors placed 30 feet waterward of the eelgrass
- Preconstruction notification not required
- Permit re-issued 12/17/06, expires 12/17/08

US Coast Guard – Private Aids to Navigation (PATON) Approval

- 8 regulatory buoys operated annually May 1 to September 30
- Approval issued 11/4/03

WDFW – Hydraulic Project Approval

- 6-8 seasonal marker buoys shall be installed from May 1 to November 1 of any year
- Copy of project plan shall be onsite during construction/installation
- Buoy should be marked with HPA Control Number (i.e. F9358WDFW)
- Locate buoys a minimum of 30 linear feet waterward of the eelgrass
- Use buoyant line or subsurface float to keep the line from contacting the bottom during low tide cycles
- Subsurface float shall be located 1/3 of the way up from the bottom
- Scope of line shall not be more than extreme high tide depth plus 20%.

- Permit issued 2/2/04, modified 3/8/05 and expires 2/2/09

WDNR – Right of Entry Agreement

- Up to 8 seasonal marker buoys will be located May through September
- Helical screw anchors will be placed seaward of the eelgrass beds and may remain in place year-round

Implementation Plan Schedule

March

- Select professional dive contractor for buoy deployment operations
- Obtain and construct all needed equipment
- Notify permit agencies of installation date
- Solicit & train dive volunteers for monitoring
- Begin boater education & project outreach

April

- Install seasonal marker buoys to meet all permit requirements
- Begin project monitoring

May - September

- Ongoing monitoring
- Begin permit renewal processes
- Notify permit agencies of removal date

October

- Remove buoys leaving anchors in place
- Transport buoys to over-winter storage

The Project Manager will oversee this plan and schedule and coordinate with the professional dive contractor(s) and project volunteers.

Possible Project Expansion

As the MRC reflects on the success of the project, the group can consider possible project expansion to further protect nearshore eelgrass resources. One option discussed in early planning stages is to extend the VEPZ south to the Boat Haven to include the eelgrass habitat south of the current project area. While boat anchoring activity is less intense in this area, the data shows such activity is present on a regular basis. Other areas where anchoring activity is more intense, include Mystery Bay and Port Hadlock.

In 2007 the Jefferson MRC acquired more recent eelgrass mapping data in the project area, south to Boat Haven, Mystery Bay and Port Hadlock. In addition to underwater videography conducted by Marine Resource Consultants (NORRIS) of Port Townsend, additional data were collected using side scan sonar. The side scan sonar (SSS) data acquisition was conducted by Blue Water Engineering Services, Inc. of Port Townsend, WA. The SSS is an effective tool to "fill in the details" between the NORRIS method track lines. The NORRIS method runs track lines in a quasi-sine wave across the near and far edges of eelgrass beds, and only detects data directly beneath the survey boat. The amplitude of their quasi-sine wave can vary from hundreds to over 1000 feet. The SSS data can fill in the gaps between their track lines.

In 2007-2008, these data will be combined with public education and outreach to determine the most effective management protocols for eelgrass protection in these new locations.

Project Partners

With several years of project implementation experience, the Jefferson MRC is reluctant to expand into other areas with marker buoys until project partners can be secured for maintaining the Port Townsend waterfront eelgrass protection zone. Solicitation of partners is timely now that the following issues have been resolved: 1) tackle and equipment failures have been reduced to a near non-existent level, 2) a long-term lease has been obtained from DNR, and 3) the project has a proven track record of successfully minimizing impacts to eelgrass beds from anchoring.

In 2007-2008, the MRC will actively seek partners to assist with buoy deployment and maintenance.

Conclusion

Despite the difficulties in the early years, the buoys have affected boating activities to reduce negative impacts to the sensitive eelgrass habitat along the downtown Port Townsend shoreline. Further monitoring and project continuation and expansion are warranted.

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